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EXAMINER	
TANG, KENNETH	

ART UNIT	PAPER NUMBER
2195	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/714,597	HORIKAWA, SHIGERU	
	Examiner	Art Unit	
	KENNETH TANG	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-10 are presented for examination.

2. This action is in response to the RCE/Amendment/Remarks on 8/17/09. Applicant's arguments have been fully considered but not found to be persuasive. In addition, Applicant's amendment to the claims prompted new grounds of rejections.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colle et al. (hereinafter Colle) (US 2004/0158568 A1) in view of McMahan et al. (hereinafter McMahan) (US 2002/0161902 A1).

4. Colle was cited in the previous office action.

5. As to claim 1, Colle teaches a job scheduling management method for managing schedules of jobs allocated to computers connected through a network (see Abstract, Fig. 1, items 110, 115, 120, 125), comprising the steps of:

monitoring a performance state of a resource of a computer, including in said computers, to which said jobs have been allocated (utilization or availability, etc.) (Fig. 1, item 145, page 3, [0033], page 1, [0008] and [0009], page 11, [0113]);

determining if said performance state meets a predetermined condition (alerted by utilization exceeding a certain threshold percentage, for example) (page 11, [0114], page 1, [0011]);

if said performance state meets said predetermined condition, detecting a job, of said jobs allocated to said computer, that is uncompleted at a timing when said predetermined condition is met (task items that need to be completed as part of performing a service action) (see Abstract, page 11, [0114], [0116], [0121], lines 1-5; [0053]);

detecting another computer that is available to execute said detected uncompleted job (task items that need to be completed) based on information concerning resources required for executing said detected uncompleted job (scheduling based on availability information of resources) (page 1, [0008], see Abstract); and

allocating said detected uncompleted job to said detected other computer (scheduling available resource to execute task items that need to be completed) (see Abstract, page 2, [0016]).

6. Colle does teach tracking the usage rate of resources. But Colle does not expressly disclose that the resources comprise a CPU, or memory, etc. Furthermore, Colle does not explicitly teach detecting/allocating resources based on information of an inter-resource distance which is a cost value taken when an execution computer of said computers uses an available resource included in a plurality of resources usable by said computers, the cost being defined as a value representing efficiency for use of said resources.

7. However, McMahan teaches a system/method for allocating computer resources for efficient use of a program, wherein resources include a processor, one or more I/O devices, and memory arrays (lines 1-4 of [0021]). Furthermore, McMahan teaches and that resources are allocated/selected based on the shortest distance between two resources so that communication occurs as fast and efficient as possible (Abstract; [0004]; [0005]; [0021]).

8. Colle and McMahan are analogous art because they are in the same field of endeavor of resource allocation and both solving the same problem of improving its performance. Thus, one of ordinary skill in the art would have known to modify Colle's resource allocation system such that it the tracking resource would comprises specifically of tracking processors, memory, etc., and that allocation is made based on the closest proximity of resources, as taught in McMahan. The suggestion/motivation for doing so would have been to provide the predicted result of increased efficiency, intelligence, and speed (time to transfer data from one resource to the other) of the system (Abstract; [0002]; [0021]). Therefore, it would have been obvious to one of ordinary skill in the art to combine Colle and McMahan to obtain the invention of claim 1.

9. As to claim 3, Colle teaches a job scheduling management method in a management computer for allocating jobs to a plurality of computers connected through a network and managing a schedule of each of said jobs (see Abstract, Fig. 1, items 110, 115, 120, 125), comprising the steps of:

managing first information indicating correspondence between said job and said computer to which said job is allocated, second information indicating one or more resources required for executing said job, and third information indicating one or more resources to be used by each of said computers (Fig. 1, item 150, 130, etc., [0028], [0029]);

monitoring a performance state of a resource of said computer to which said job is allocated (utilization or availability, etc.) Fig. 1, item 145, page 3, [0033], page 1, [0008] and [0009], page 11, [0113]);

determining if said operating state meets a predetermined condition (alerted by utilization exceeding a certain threshold percentage, for example) (page 11, [0114], page 1, [0011]);

detecting an uncompleted job among said jobs allocated to said computers using said first information (task items that need to be completed as part of performing a service action) (see Abstract, page 11, [0114], [0116], [0121], lines 1-5, Fig. 1, items 150, 130);

extracting one or more resources required for executing said detected uncompleted job using said second information (scheduling based on availability information of resources) (page 1, [0008], see Abstract, Fig. 1, items 150, 130);

extracting another computer among said plurality of computers that is available to use said extracted resources using said third information (scheduling based on availability information of resources) (page 1, [0008], see Abstract, Fig. 1, items 150, 130, 120, 125, etc.); and

allocating said detected uncompleted job to said extracted other computer (scheduling available resource to execute task items that need to be completed) (see Abstract, page 2, [0016]).

10. Colle does teach tracking the usage rate of resources. But Colle does not expressly disclose that the resources comprise a CPU, or memory, etc. Furthermore, Colle does not explicitly teach detecting/allocating resources based on information of an inter-resource distance which is a cost value taken when an execution computer of said computers uses an available resource included in a plurality of resources usable by said computers, the cost being defined as a value representing efficiency for use of said resources.

11. However, McMahan teaches a system/method for allocating computer resources for efficient use of a program, wherein resources include a processor, one or more I/O devices, and memory arrays (lines 1-4 of [0021]). Furthermore, McMahan teaches and that resources are allocated/selected based on the shortest distance between two resources so that communication occurs as fast and efficient as possible (Abstract; [0004]; [0005]; [0021]).

12. Colle and McMahan are analogous art because they are in the same field of endeavor of resource allocation and both solving the same problem of improving its performance. Thus, one of ordinary skill in the art would have known to modify Colle's resource allocation system such

that it the tracking resource would comprises specifically of tracking processors, memory, etc., and that allocation is made based on the closest proximity of resources, as taught in McMahan. The suggestion/motivation for doing so would have been to provide the predicted result of increased efficiency, intelligence, and speed (time to transfer data from one resource to the other) of the system (Abstract; [0002]; [0021]). Therefore, it would have been obvious to one of ordinary skill in the art to combine Colle and McMahan to obtain the invention of claim 3.

13. As to claim 4, Colle teaches wherein when allocating said detected uncompleted job to said extracted other computer, said job and the other jobs having been already allocated to the other computer are rescheduled (page 13, [0135]).

14. As to claim 5, Colle teaches a job scheduling management method as claimed in claim 3, further comprising the steps of:

when allocating said detected uncompleted job to said extracted other computer, detecting an uncompleted job of said jobs having been already allocated to said extracted another computer using said first information (dynamic scheduling and rescheduling wherein the scheduler is modified dynamically) (page 13, [0135]);

extracting one or more resources required for executing said detected uncompleted job of said computer using said second information (scheduling based on availability information of resources) (page 1, [0008], see Abstract, Fig. 1, items 150, 130);

extracting further computer that is available to use said extracted resources for said another computer using said third information (scheduling based on availability information of resources) (page 1, [0008], see Abstract, Fig. 1, items 150, 130, 120, 125, etc.); and

allocating said detected uncompleted job to said extracted further computer (scheduling available resource to execute task items that need to be completed) (see Abstract, page 2, [0016]).

15. As to claim 6, McMahan teaches said management computer allocates one or more jobs to itself ([0022]). It would have been obvious to one of ordinary skill in the art to have the jobs allocated to itself because resources on the same node/computer have a shorter distance than resources in a different node/computer (see McMahan – first two senteces of [0022]).

16. As to claim 8, Colle teaches a job scheduling management method as claimed in claim 3, wherein when allocating said detected uncompleted job to said extracted other computer, said detected uncompleted job is allocated to a plurality of other computers among said plurality of computers according to one or more resources required for executing said job (dynamic scheduling and rescheduling wherein the scheduler is modified dynamically and scheduling based on availability information of a plurality of resources) (page 13, [0135], page 1, [0008], see Abstract, Fig. 1, items 150, 130, 120, 125, etc.).

17. As to claim 9, Colle teaches a job scheduling management computer for allocating jobs to a plurality of computers connected through a network and managing schedules of said jobs, comprising (see Abstract, Fig. 1, items 110, 115, 120, 125):

management means for managing information indicating that a first job is allocated to a first one of said computers and a second job is allocated to a second one of said computers (page 2, [0016], page 5, [0055], lines 12-24));

monitoring means for monitoring a performance state of a resource of said first computer (Fig. 1, item 145, age 3, [0033]); and

rescheduling means for re-allocating said first job allocated to said first computer into said second computer and said second job allocated to said second computer to a third one of said computers with respect to information managed by said management means in accordance with an instruction given from said monitoring means (page 13, [0135]).

18. Colle does teach tracking the usage rate of resources. But Colle does not expressly disclose that the resources comprise a CPU, or memory, etc. Furthermore, Colle does not explicitly teach detecting/allocating resources based on information of an inter-resource distance which is a cost value taken when an execution computer of said computers uses an available resource included in a plurality of resources usable by said computers, the cost being defined as a value representing efficiency for use of said resources.

19. However, McMahan teaches a system/method for allocating computer resources for efficient use of a program, wherein resources include a processor, one or more I/O devices, and memory arrays (lines 1-4 of [0021]). Furthermore, McMahan teaches and that resources are

allocated/selected based on the shortest distance between two resources so that communication occurs as fast and efficient as possible (Abstract; [0004]; [0005]; [0021]).

20. Colle and McMahan are analogous art because they are in the same field of endeavor of resource allocation and both solving the same problem of improving its performance. Thus, one of ordinary skill in the art would have known to modify Colle's resource allocation system such that it the tracking resource would comprises specifically of tracking processors, memory, etc., and that allocation is made based on the closest proximity of resources, as taught in McMahan. The suggestion/motivation for doing so would have been to provide the predicted result of increased efficiency, intelligence, and speed (time to transfer data from one resource to the other) of the system (Abstract; [0002]; [0021]). Therefore, it would have been obvious to one of ordinary skill in the art to combine Colle and McMahan to obtain the invention of claim 9.

21. As to claim 10, it is rejected for the same reasons as stated in the rejection of claim 3.

22. **Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Colle et al. (hereinafter Colle) (US 2004/0158568 A1) in view of McMahan et al. (hereinafter McMahan) (US 2002/0161902 A1), and further in view of Burnley et al. (hereinafter Burnley) (US 7,188,170 B1).**

23. Colle and Burnley were cited in the previous office action.

24. As to claim 2, Colle in view of McMahan are silent in teaching wherein the determination as to if said predetermined condition is met is based on how many times the usage rate of the CPU exceeds a predetermined usage rate. However, Burnley teaches wherein the determination as to if said predetermined condition is met is based on how many times the usage rate of said CPU exceeds a predetermined usage rate (col. 21, lines 1-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Colle in view of McMahan such that it would include the feature of wherein the determination as to if said predetermined condition is met is based on how many times the usage rate of said CPU exceeds a predetermined usage rate, as taught in Burnley. The suggestion/motivation for doing so would have been to provide the predicted result of an improved analysis/tracking of the resource data by having more filters and analysis data that provides better understanding of the resources and its utilization (col. 1, lines 22-36). Therefore, it would have been obvious to one of ordinary skill in the art to combine Colle, McMahan, and Burnley to obtain the invention of claim 2.

25. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Colle et al. (hereinafter Colle) (US 2004/0158568 A1) in view of McMahan et al. (hereinafter McMahan) (US 2002/0161902 A1), and further in view of Tanaka (US 2003/0074387 A1).

26. Colle and Tanaka were cited in the previous office action.

27. As to claim 7, McMahan teaches wherein said management computer further manages information indicating correspondence between said job and a time when said job is to be finished and information indicating a time passed in executing said job, and allocating the

uncompleted job of said jobs allocated to said computer to another computer if predetermined conditions are not met based on the closest proximity of the resources (see rejection of claim 3 above). It prefers to allocate the job to itself because it has the closest proximity, but if not capable, it would allocate the job to another computer/node that is next closest in distance ([0021]-[0022]).

28. However, Colle and McMahan does not specifically teach predicting that said job is not finished in the time expected. Tanaka teaches distributing jobs based on predicting a completion time of the jobs (see Abstract, [0023]). One of ordinary skill in the art would have known to modify Colle in view of McMahan's job distribution such that it would take into consideration the prediction of the job completion time. The suggestion/motivation for doing so would have been to provide the predicted result of being able to adjust the job allocation in accordance with circumstances such as not being able to finish within the time expected (Tanaka - page 2, [0024]). This allows for efficient distribution of jobs loaded in the system. Therefore, it would have been obvious to one of ordinary skill in the art to combine Colle, McMahan, and Tanaka to obtain the invention of claim 7.

Response to Arguments

29. During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once

issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

30. Applicant argues in the Remarks that the prior art of record do not teach the limitations of the previously presented claims in addition to the newly amended claimed limitations.

Applicant merely makes this statement without providing any support for it. Therefore, Applicant's arguments were not found to be persuasive. In addition, Applicant's amendment to the claims prompted the new grounds of rejections that make the arguments moot.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- **Pothos et al. (US 7,210,119 B2)** discloses the handling of unscheduled tasks in a scheduling process that computes the distance of resources from the unscheduled task and ranks the candidate resources according to the distance therefrom (see Abstract, claims 2 and 8).
- **Deng et al. (US 6,938,256 B2)** discloses dynamic resource allocation using a resource table with metrics of distance between pairings of requests and servers as well as utilizing predictive information (see Abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENNETH TANG whose telephone number is (571)272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kenneth Tang/
Examiner, Art Unit 2195